

REMARKS

This Amendment is responsive to the Office Action mailed on September 3, 2004. Claims 1-3, 5, 7, 18-20, 27-29, 32, and 34 are amended. Claims 36 and 37 are new. Claims 1-37 are pending.

The Examiner has indicated that claims 14 and 24 contain allowable subject matter.

The Examiner has objected to claims 25, 26, and 29. In particular, the Examiner indicates that the limitations “first winding”, “second winding”, and “eccentric drive” mentioned in these claims should be incorporated into the specification and drawings. Applicants submit that these limitations are disclosed in the specification and drawings. For example, a first winding head 162 and a second winding head 182 are discussed at pages 17 and 18 of the specification and shown in Figure 1. An eccentric drive 50 is disclosed on page 13 of the specification and shown in Figure 1. Withdrawal of the objection to claims 25, 26, and 29 is respectfully requested.

Claims 1-12, 16-22, and 25-35 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ikeda (JP 10-274178).

Claims 13, 15, and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda in view of Kimata (JP 2000-345978).

Applicants respectfully traverse these rejections in view of the amended claims and the following comments.

Discussion of Amended Claims

Claim 1 is amended to more clearly define the claimed invention, in particular, the flow path of the refrigerant and the position of the oil separator. Claims 2, 3, 5, 7, 18-20, 27-29, 32, and 34 are amended to conform to amended claim 1 and to improve readability of the claims.

New claim 36 is based on original claim 1 and specifies that the oil separator is arranged inside the outer housing in the space between the outer housing and the motor housing and separated from an oil sump by a free space between the outer housing and the motor housing, the free space guiding the oil separated from the refrigerant in the oil separator into the sump.

New claim 37 is based on original claim 1 and specifies that the oil separator being

arranged inside the outer housing in the space between the outer housing and the motor housing, the refrigerant when entering the oil separator experiencing a deflection in an azimuthal direction in relation to the central axis and being guided in the azimuthal direction by an inner wall face of the outer housing and an outer wall face of the motor housing in order to deposit oil thereon

Discussion of Ikeda

Claims 1-12, 16-22, and 25-35 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ikeda. This rejection is respectfully traversed. An anticipation rejection requires that each and every element of the claimed invention as set forth in the claim be provided in the cited reference. See *Akamai Technologies Inc. v. Cable & Wireless Internet Services Inc.*, 68 USPQ2d 1186 (CA FC 2003), and cases cited therein. As discussed in detail below, Ikeda does not meet the requirements for an anticipation rejection.

For the Examiner's convenience, a computer generated English language translation of the Ikeda reference is enclosed. All references to Ikeda in the discussion below are references to the attached English language translation.

Figure 9 of Ikeda shows a prior art scroll compressor, which is the starting point for the compressor design disclosed in Ikeda. This prior art compressor has an inlet 12 for refrigerant, which is designed so that drawn-in refrigerant flows over the oil sump. With this design, there is a risk that, in the case of a high flow velocity, the refrigerant inhales oil from the sump and carries it towards the scroll (Ikeda, Figure 9; and para. 9).

Figure 10 of Ikeda shows a further prior art compressor design, which teaches that the drawn-in refrigerant is flowing around the motor housing in the space between the outer housing and the motor housing. Most of the refrigerant enters the scroll compressor 2 before directly cooling the motor 6. A return oil pipe 17 is provided for the oil coming from the upper bearing (Ikeda, Figure 10, para. 10).

The Examiner has relied on paragraph 28 of Ikeda as disclosing an oil separator. Applicants respectfully submit that this paragraph does not refer to an oil separator as assumed by the Examiner. Rather, paragraph 28 of Ikeda only indicates that when lubricating oil drops

from drain hole 18 directly on a motor, it descends through the clearance between the motors 6 with the flow of gas, and arrives at the sump. Paragraph 28 of Ikeda indicates that the oil dropping down from the drain hole 18 onto the motor is not taken up by the refrigerant flowing within inner shell 14 of the motor 6. The oil is not taken up by the refrigerant due to the small flow rate of the refrigerant within the inner shell 14. Due to the low flow rate of the refrigerant there is no need to use a return oil pipe 17 as required with the prior art design shown in Figure 10 (Ikeda, para. 28).

Accordingly, paragraph 28 of Ikeda relied on by the Examiner only deals with the fact that oil drops which drop down onto the motor 6 are not taken up by the refrigerant and thus are not transported towards the scroll compressor. There is no discussion or suggestion in paragraph 28 of Ikeda that an oil separator is used in order to separate oil in the flow of refrigerant from the refrigerant before the refrigerant enters the scroll compressor, as is achieved with Applicants' claimed invention.

Further, there is no disclosure or suggestion in Ikeda that an oil separator is provided between the motor housing and the outer housing of the compressor, as claimed by Applicants in amended claim 1 and new claims 36 and 37.

As Ikeda does not disclose each and every element of the invention as claimed, the rejections under 35 U.S.C. § 102(b) are believed to be improper, and withdrawal of the rejections is respectfully requested. See, *Akamai Technologies Inc., supra*.

Further, the Examiner's reliance on Kimata in combination with Ikeda is misplaced. Kimatadoes discloses only a circular flow of refrigerant within the motor housing, not in an oil separator as claimed by Applicants.

Applicants respectfully submit that the present invention is not anticipated by and would not have been obvious to one skilled in the art in view of Ikeda, taken alone or in combination with Kimata, or any of the other prior art of record.

Withdrawal of the rejections under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a) is respectfully requested.

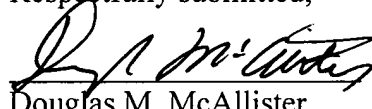
Further remarks regarding the asserted relationship between Applicant's claims and the prior art are not deemed necessary, in view of the amended claims and the foregoing discussion.

Applicants' silence as to any of the Examiner's comments is not indicative of an acquiescence to the stated grounds of rejection.

Conclusion

The Examiner is respectfully requested to reconsider this application, allow each of the pending claims and to pass this application on to an early issue. If there are any remaining issues that need to be addressed in order to place this application into condition for allowance, the Examiner is requested to telephone Applicants' undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "D. M. McAllister", is written over a horizontal line.

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[JP,10-274178,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE
INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the scrolling compressor used as compressors, such as an air conditioner and a refrigerator.

[0002]

[Description of the Prior Art] Drawing 9 is drawing of longitudinal section showing the conventional scrolling compressor shown in JP, 1-105780, U. In drawing, the well-closed container with which, as for 1, the axis of nothing straight side, i.e., a cylindrical shape, has been arranged in the shape of a cylindrical shape at the set-up condition, and 2 are compressor styles, and are constituted by the fixed scrolling 3 and the rocking scrolling 4 which have the tabular whorl gear tooth formed in the up approach in a well-closed container 1. 5 is the bearing object fixed in the well-closed container 1, and **** rocking scrolling 4.

[0003] 6 is the motor formed in the anti-compressor style 2 side in a well-closed container 1, i.e., the lower approach of a well-closed container 1, and drives the rocking scrolling 4 with an output shaft 7. The oil pump with which 8 was prepared in the edge by the side of the anti-compressor style 2 of an output shaft 7, and 9 are lubricating oils, it is stored, the edge, i.e., the lower limit section, by the side of the anti-compressor style 2 in a well-closed container 1, and the oil pump 8 is arranged at the immersion condition.

[0004] They are the muffler by which 10 was formed in between a well-closed container 1 edge circles side and the fixed scrolling 3 (i.e., the upper limit section of a well-closed container 1), the incurrent pore by which 11 was prepared in the bearing object 5, the inhalation pipe which 12 was prepared in the well-closed container 1, and carried out opening to motor 6 approach, and the regurgitation pipe which 13 was prepared in the well-closed container 1, and carried out opening to the muffler 10.

[0005] The conventional scrolling compressor is constituted as mentioned above, and while gas is inhaled from the inhalation pipe 12 and flows the inside of a well-closed container 1 in the upper part from the lower part, it cools a motor 6. And it is incorporated by the compressor style 2 prepared in the upper part in a well-closed container 1, is compressed into it, and becomes an elevated temperature and high-pressure gas. Subsequently, it is breathed out out of a well-closed container 1 from the regurgitation pipe 13 which carried out opening to the muffler 10.

[0006] Moreover, drawing 10 is drawing of longitudinal section showing other conventional scrolling compressors. In drawing, above-mentioned drawing 9 and an above-mentioned same sign show a considerable part, it is arranged at this alignment, and in the nothing well-closed container 1, 14 is inner shell and the bearing object 5 and the motor 6 are established [it is supported by the well-closed container 1 and] by the supporter material 15 in the shape of a cylindrical shape. An end carries out opening of drain oil covering with which 16 was prepared in the inferior surface of tongue of the bearing object 5, and 17 into the drain oil covering 16, and the other end is a return oil pipe which approached the 9th page of a lubricating oil and has been arranged.

[0007] Also in the scrolling compressor constituted like drawing 10, while gas is inhaled from the inhalation pipe 12 and flows the inside of a well-closed container 1 in the upper part from the lower part, a motor 6 is cooled. And it is incorporated by the compressor style 2 prepared in the upper part in a well-closed container 1, is compressed into it, and becomes an elevated temperature and high-

pressure gas. Subsequently, it is breathed out out of a well-closed container 1 from the regurgitation pipe 13 which carried out opening to the muffler 10.

[0008] In addition, with a low voltage form sealing compressor, it is filled with a suction pressure ambient atmosphere in [most] a well-closed container 1. And the gas inhaled enters in a compressor 2 at low temperature relatively, after it cools the motor 6 arranged in a suction pressure ambient atmosphere, it is incorporated and compressed into the compressor style 2, turns into an elevated temperature and high-pressure gas, and is breathed out out of a compressor.

[0009]

[Problem(s) to be Solved by the Invention] In the scrolling compressor shown in above conventional drawing 9, in the compressor style 2, gas consists is easy to be incorporated directly of an inhalation pipe 12, so that the stowed position of the inhalation pipe 12 becomes the up approach of a well-closed container 1. For this reason, the gas passageway of the motor 6 neighborhood becomes is hard to be formed. Therefore, since trouble will be caused to cooling of a motor 6 in operation of a scrolling compressor, in order to cool a motor 6 efficiently, it is desirable to equip the lower approach of a well-closed container 1 with the inhalation pipe 12 as much as possible.

[0010] However, there is evil produced by equipping the lower approach of a well-closed container 1 with the inhalation pipe 12 as much as possible. That is, since the lubricating oil 9 is stored by the lower part of a well-closed container 1, if a lubricating oil 9 is involved in the inhaled gas, increase of the electrical input of an oil riser or a scrolling compressor will occur. Moreover, since the inhalation pipe 12 will be extended to the lower approach of a well-closed container 1, in a refrigeration unit etc., the piping tooth space for inhalation pipe 12 extension is needed, and an installation cost increases.

[0011] Moreover, in the conventional scrolling compressor shown in drawing 10, since the perimeter of a motor 6 is covered with the inner shell 14, the operation cooled when the inhaled gas passes along the clearance between motors 6 becomes is hard to be acquired. Moreover, on arrangement of the piping tooth space of the scrolling compressor in a refrigeration unit etc., since the up approach of a well-closed container 1 is equipped with the inhalation pipe 12, although it becomes advantageous, the great portion of gas inhaled like the above-mentioned case is directly incorporated by the compressor style 2. Therefore, there was a trouble that a necessary motor 6 cooling operation was not acquired.

[0012] This invention is made in order to cancel this trouble, and it aims at obtaining the scrolling compressor with which it can install easily and a cooling operation of a necessary motor is acquired.

[0013]

[Means for Solving the Problem] In the scrolling compressor concerning this invention With the inner shell of the shape of a cylindrical shape with which it was equipped by supporter material in the well-closed container, among these, fixed scrolling and rocking scrolling which are prepared in the up approach of the well-closed container in shell, and have a tabular whorl gear tooth, The bearing object which was fixed to inner shell and ****(ed) rocking scrolling, and the motor which is formed in the lower approach of the well-closed container in inner shell, and drives rocking scrolling, The compressor style which consists of fixed scrolling and rocking scrolling, and inhales the gas by the side of the lower part in a well-closed container, and the inhalation pipe which countered the inhalation hole which it was prepared in the well-closed container and carried out opening to inner shell, has been arranged, and was open for free passage to the well-closed container are prepared.

[0014] Moreover, it sets to the scrolling compressor concerning this invention. With the inner shell of the shape of a cylindrical shape arranged in a well-closed container, among these, fixed scrolling and rocking scrolling which are prepared in the up approach of the well-closed container in shell, and have a tabular whorl gear tooth, The bearing object with which the side face was equipped with the rising wood of inner shell while being fixed to inner shell and ****(ing) rocking scrolling, The motor which is formed in the lower approach of the well-closed container in inner shell, and drives rocking scrolling, The compressor style which consists of fixed scrolling and rocking scrolling, and inhales the gas by the side of the lower part in a well-closed container, and the inhalation pipe which countered the inhalation hole which it was prepared in the well-closed container and carried out opening to inner shell, has been arranged, and was open for free passage to the well-closed container

are prepared.

[0015] Moreover, in the scrolling compressor concerning this invention, while a well-closed container is penetrated and equipped with an inhalation pipe, it inserts in the inhalation hole prepared in inner shell, and is arranged.

[0016] Moreover, in the scrolling compressor concerning this invention, while a well-closed container is penetrated and equipped with an inhalation pipe, adhesion fitting is carried out and it is arranged at the inhalation hole prepared in inner shell.

[0017] Moreover, in the scrolling compressor concerning this invention, while a well-closed container is penetrated and equipped with an inhalation pipe, it inserts in the inhalation hole prepared in inner shell, and is arranged, and an auxiliary hole is prepared in the side face of an inhalation pipe, and it is arranged in the location corresponding to between a well-closed container and inner shell.

[0018] Moreover, in the scrolling compressor concerning this invention, while a well-closed container is penetrated and equipped with an inhalation pipe, it inserts in the inhalation hole prepared in inner shell, and is arranged, and auxiliary passage is prepared between the side face of a bearing object, and inner shell.

[0019] Moreover, in the scrolling compressor concerning this invention, while a well-closed container is penetrated and equipped with an inhalation pipe, adhesion fitting is carried out and it is arranged by the sealant at the inhalation hole prepared in inner shell.

[0020]

[Embodiment of the Invention]

Gestalt 1. drawing 1 and drawing 2 of operation are drawing showing an example of the gestalt of implementation of this invention, drawing 1 is drawing of longitudinal section, and drawing 2 is the enlarged drawing of the inhalation pipe part of drawing 1. In drawing, the well-closed container with which, as for 1, the axis of nothing straight side, i.e., a cylindrical shape, has been arranged in the shape of a cylindrical shape at the set-up condition, and 2 are compressor styles, and are constituted by the fixed scrolling 3 and the rocking scrolling 4 which have the tabular whorl gear tooth formed in the up approach in a well-closed container 1. 5 is the bearing object established in the well-closed container 1, and **** rocking scrolling 4.

[0021] 6 is the motor formed in the anti-compressor style 2 side in a well-closed container 1, i.e., the lower approach of a well-closed container 1, and drives the rocking scrolling 4 with an output shaft 7. The oil pump with which 8 was prepared in the edge by the side of the anti-compressor style 2 of an output shaft 7, and 9 are lubricating oils, it is stored, the edge, i.e., the lower limit section, by the side of the anti-compressor style 2 in a well-closed container 1, and the oil pump 8 is arranged at the immersion condition.

[0022] They are the muffler by which 10 was formed in between a well-closed container 1 edge circles side and the fixed scrolling 3 (i.e., the upper limit section of a well-closed container 1), the incurrent pore by which 11 was prepared in the bearing object 5, the inhalation pipe which 12 was prepared in the well-closed container 1, and carried out opening to motor 6 approach, and the regurgitation pipe which 13 was prepared in the well-closed container 1, and carried out opening to the muffler 10.

[0023] 14 is inner shell, in the shape of a cylindrical shape, in the nothing well-closed container 1, it is arranged at this alignment, and it is supported by the well-closed container 1 and the bearing object 5 and the motor 6 are established by the supporter material 15. Drain oil covering with which 16 was prepared in the inferior surface of tongue of the bearing object 5, the drain oil hole which carried out opening of 18 to the drain oil covering 16, and 19 are inhalation holes, prepare and carry out opening to the inner shell 14, and are arranged in the inhalation pipe 12 and the location which counters.

[0024] In the scrolling compressor constituted as mentioned above, a lubricating oil 9 can give a head with an oil pump 8, goes up, and carries out the lubrication of the compressor style 2 grade. And it piles up in the drain oil covering 16 after that, it is dropped from the drain oil hole 18, and flows back in the lower limit section in a well-closed container 1. Moreover, it is manufactured by low rigidity in comparison and the switching noise and vibration which are generated in the compressor style 2, the bearing object 5, and motor 6 grade get across to a well-closed container 1 directly, and the supporter material 15 is designed so that the fault which makes the unpleasant noise

may be prevented.

[0025] By forming such supporter material 15, the noise and the scrolling compressor which can control vibration to the minimum and the noise and vibration can operate calmly few are obtained. Moreover, the inhalation hole 19 prepares and carries out opening to the inner shell 14 of the inhalation pipe 12 and the location which counters, and the inhalation hole 19 is mostly arranged with the inhalation pipe 12 at in phase and this height. Moreover, the rising wood of the inner shell 14 sticks to the side face of the bearing object 5, and fitting is carried out, and it is constituted so that a gas stream may hardly pass this fitting section.

[0026] And the gas drawn in the well-closed container 1 from the inhalation pipe 12 flows in the direction of the arrow head shown in drawing 1. That is, the great portion of gas flows in the inner shell 14 through the inhalation hole 19 of the inner shell 14, it descends through the clearance between the motors 6 in the inner shell 14, and goes to the lower part of the inner shell 14. The flow of this gas is low temperature in comparison, and since it passes while the clearance between motors 6 is accelerated, a motor 6 is cooled efficiently.

[0027] Moreover, in the up approach of a well-closed container 1, since the compressor style 2 has incorporated the gas of a low ambient atmosphere, the flow of the gas which goes to the upper part from a lower part in the space across which well-closed container 1 inner circumference and inner shell 14 periphery face with negative pressure is formed. Therefore, the gas which cooled the motor 6 and flowed up to inner shell 14 lower limit changes a direction, and goes up the space of the shape of a cylinder formed of well-closed container 1 inner circumference and inner shell 14 periphery.

[0028] And the gas which went up is incorporated and compressed into the compressor style 2 from an incurrent pore 11, turns into an elevated temperature and high pressure gas, and is breathed out out of a well-closed container 1 from the regurgitation pipe 13 through a muffler 10. Moreover, although the lubricating oil 9 dropped from the drain oil hole 18 gets down directly on a motor 6, it descends through the clearance between motors 6 with the flow of gas. And it dissociates with gas in the phase in which the rate of flow became small in inner shell 14 lower space, and returns to the lower part in a well-closed container 1. Therefore, the member of the return oil pipe 17 in above-mentioned drawing 10 is omissible.

[0029] Moreover, since the flow of the gas which goes caudad from the upper part in a scrolling compressor occurs, the location of a well-closed container 1 high in comparison can be equipped with the inhalation pipe 12. For this reason, the fault which a piping tooth space is needed for extending the inhalation pipe 12 to the lower approach of a well-closed container 1 like the scrolling compressor shown in above-mentioned drawing 9, or an installation cost increases is cancelable.

[0030] In short, in the gestalt of operation of drawing 1 and drawing 2, the great portion of gas flows in the inner shell 14 through the inhalation hole 19 of the inner shell 14. And since the operation which low-temperature gas flows caudad through the clearance between motors 6 in comparison, and cools a motor 6 efficiently is acquired, the scrolling compressor which can be operated with high dependability is realizable.

[0031] Moreover, the operation which controls the noise and vibration and makes operation calm is acquired by supporting the inner shell 14 by the supporter material 15. Moreover, the fault produced when a lubricating oil 9 mixes in gas can be prevented, and the fault of the increase of a necessary tooth space by extending the inhalation pipe 12 to the lower approach of a well-closed container 1 further and the increase of costs can be canceled.

[0032] Gestalt 2. drawing 3 of operation is drawing of longitudinal section showing an example of the gestalt of other operations of this invention. In drawing, drawing 1 and above-mentioned drawing 2, and an above-mentioned same sign show a considerable part, it is inner shell, and the bearing object 5 is equipped with rising wood by being arranged in the nothing well-closed container 1 at this alignment, 14 sticks the shape of a cylindrical shape to the side face of the bearing object 5, and fitting is carried out.

[0033] Also in the scrolling compressor constituted as mentioned above, the inner shell 14 is arranged in a well-closed container 1 at this alignment, and the inhalation hole 19 prepares and carries out opening to the inner shell 14, and it is arranged in the inhalation pipe 12 and the location which counters. Therefore, although detailed explanation is omitted, a cooling operation of the motor 6 by drawing 1 and the gas in the gestalt of operation of drawing 2 flowing caudad through a

clearance also in the gestalt of operation of drawing 3 can be acquired. Moreover, an operation of the fault prevention by a lubricating oil 9 mixing in gas and the fault prevention by extending the inhalation pipe 12 to the lower approach of a well-closed container 1 can be acquired.

[0034] Gestalt 3. drawing 4 of operation is also drawing showing an example of the gestalt of other operations of this invention, and is the above-mentioned drawing 2 equivalent Fig. In addition, the scrolling compressor as well as drawing 1 of the above-mentioned [everything but drawing 4] and the scrolling compressor of drawing 2 is constituted. In drawing, drawing 1 and above-mentioned drawing 2, and an above-mentioned same sign show a considerable part, and 20 is an inhalation pipe, while a well-closed container 1 is penetrated and equipped, it is inserted in the inhalation hole 19 prepared in the inner shell 14, and is arranged.

[0035] In the scrolling compressor constituted as mentioned above, the inhalation hole 19 of the inner shell 14 is countered, and the inhalation pipe 20 is arranged, the inner shell 14 is supported by the supporter material 15, and the inhalation pipe 20 is arranged at the up approach of a well-closed container 1. Therefore, although detailed explanation is omitted, also in the gestalt of operation of drawing 4, the same operation as the gestalt of operation of drawing 1 and drawing 2 is acquired.

[0036] Moreover, a well-closed container 1 is penetrated and equipped with the inhalation pipe 20, and it inserts in the inhalation hole 19 of the inner shell 14, and is arranged. For this reason, since gas is directly led to the inner shell 14 interior, gas flows in the inner shell 14 much more efficiently, and the quantity of gas flow which flows caudad increases the clearance between motors 6. Therefore, the operation which cools a motor 6 still more effectively is acquired. In addition, it can apply to the gestalt of operation of the configuration of the gestalt of operation of drawing 4 of above-mentioned drawing 3 easily, and the operation which cools a motor 6 more effectively can be acquired.

[0037] Gestalt 4. drawing 5 of operation is also drawing showing an example of the gestalt of other operations of this invention, and is the above-mentioned drawing 2 equivalent Fig. In addition, the scrolling compressor as well as drawing 1 of the above-mentioned [everything but drawing 5] and the scrolling compressor of drawing 2 is constituted. In drawing, drawing 1 and above-mentioned drawing 2, and an above-mentioned same sign show a considerable part, and 20 is an inhalation pipe, while a well-closed container 1 is penetrated and equipped, it is inserted in the inhalation hole 19 prepared in the inner shell 14, and is arranged. 21 is an auxiliary pipe, and while fitting is carried out to the inhalation hole 19, press fit fitting of it is carried out to the inhalation pipe 20.

[0038] In the scrolling compressor constituted as mentioned above, the inhalation hole 19 of the inner shell 14 is countered, and the inhalation pipe 20 is arranged, the inner shell 14 is supported by the supporter material 15, and the inhalation pipe 20 is arranged at the up approach of a well-closed container 1. Therefore, although detailed explanation is omitted, also in the gestalt of operation of drawing 5, the same operation as the gestalt of operation of drawing 1 and drawing 2 is acquired.

[0039] Moreover, a well-closed container 1 is penetrated and equipped with the inhalation pipe 20, and through the auxiliary pipe 21, adhesion insertion is carried out and it is arranged at the inhalation hole 19 of the inner shell 14. For this reason, since gas is directly led to the inner shell 14 interior, gas flows in the inner shell 14 much more efficiently, and the quantity of gas flow which flows caudad increases the clearance between motors 6. Therefore, the operation which cools a motor 6 more effectively is acquired. In addition, it can apply to the gestalt of operation of the configuration of the gestalt of operation of drawing 5 of above-mentioned drawing 3 easily, and the operation which cools a motor 6 much more effectively can be acquired.

[0040] Gestalt 5. drawing 6 of operation is also drawing showing an example of the gestalt of other operations of this invention, and is the above-mentioned drawing 2 equivalent Fig. In addition, the scrolling compressor as well as drawing 1 of the above-mentioned [everything but drawing 6] and the scrolling compressor of drawing 2 is constituted. In drawing, drawing 1 and above-mentioned drawing 2, and an above-mentioned same sign show a considerable part, and 20 is an inhalation pipe, while a well-closed container 1 is penetrated and equipped, it is inserted in the inhalation hole 19 prepared in the inner shell 14, and is arranged. 21 is an auxiliary pipe, and while fitting is carried out to the inhalation hole 19, press fit fitting of it is carried out to the inhalation pipe 20. 22 is the sealant infixed between the auxiliary pipe 21 and the inhalation pipe 20.

[0041] In the scrolling compressor constituted as mentioned above, the inhalation hole 19 of the inner shell 14 is countered, and the inhalation pipe 20 is arranged, the inner shell 14 is supported by

the supporter material 15, and the inhalation pipe 20 is arranged at the up approach of a well-closed container 1. Therefore, although detailed explanation is omitted, also in the gestalt of operation of drawing 6, the same operation as the gestalt of operation of drawing 1 and drawing 2 is acquired. [0042] Moreover, a well-closed container 1 is penetrated and equipped with the inhalation pipe 20, it inserts in the inhalation hole 19 of the inner shell 14 through the auxiliary pipe 21, and is arranged, and a sealant 22 is formed between the auxiliary pipe 21 and the inhalation pipe 20, and it is sealed. For this reason, since gas is directly led to the inner shell 14 interior, gas flows in the inner shell 14 much more efficiently, and the quantity of gas flow which flows caudad increases the clearance between motors 6.

[0043] Therefore, the operation which cools a motor 6 still more effectively is acquired. In addition, it can apply to the gestalt of operation of the configuration of the gestalt of operation of drawing 6 of above-mentioned drawing 3 easily, and the operation which cools a motor 6 more effectively can be acquired.

[0044] Gestalt 6. drawing 7 of operation is also drawing showing an example of the gestalt of other operations of this invention, and is the above-mentioned drawing 2 equivalent Fig. In addition, the scrolling compressor as well as drawing 1 of the above-mentioned [everything but drawing 7] and the scrolling compressor of drawing 2 is constituted. In drawing, drawing 1 and above-mentioned drawing 2, and an above-mentioned same sign show a considerable part, 23 is the auxiliary hole prepared in the inhalation pipe 20, and is arranged on the top face and inferior surface of tongue of the inhalation pipe 20, respectively, and it is arranged in the location corresponding to between a well-closed container 1 and the inner shell 14.

[0045] In the scrolling compressor constituted as mentioned above, the inhalation hole 19 of the inner shell 14 is countered, and the inhalation pipe 20 is arranged, the inner shell 14 is supported by the supporter material 15, and the inhalation pipe 20 is arranged at the up approach of a well-closed container 1. Therefore, although detailed explanation is omitted, also in the gestalt of operation of drawing 7, the same operation as the gestalt of operation of drawing 1 and drawing 2 is acquired.

[0046] Moreover, the capacity led to the inner shell 14 and the capacity directly led to the compressor style 2 can be distributed to optimum dose by setting up suitably the location of the auxiliary hole 23 established in the inhalation pipe 20, a number, opening area, and the direction of opening. That is, everything but the need and sufficient capacity sets the gestalt of the auxiliary hole 23 as cooling of a motor 6 so that it may lead through the auxiliary hole 23 at the direct compressor style 2. By this, volumetric efficiency of the compressor style 2 cannot be spoiled, but few scrolling compressors of degradation can be obtained.

[0047] In addition, the gas inhaled receives heat from a motor 6, and the specific volume becomes large. And if specific volume becomes large, the volumetric efficiency of the gas which the compressor style 2 incorporates will get worse, and it will become the cause of degradation. Therefore, it is necessary to control cooling of the motor 6 by the gas inhaled in the range which is convenient according to the operation gestalt of a scrolling compressor. For this reason, it is necessary to consider that the engine performance of a scrolling compressor is not spoiled too much. Moreover, it can apply to the gestalt of operation of the configuration of the gestalt of operation of drawing 7 of above-mentioned drawing 3 easily, and the operation which cools a motor 6 more effectively can be acquired.

[0048] Gestalt 7. drawing 8 of operation is also drawing showing an example of the gestalt of other operations of this invention, and is the above-mentioned drawing 2 equivalent Fig. In addition, the scrolling compressor as well as drawing 1 of the above-mentioned [everything but drawing 8] and the scrolling compressor of drawing 2 is constituted. In drawing, drawing 1 and above-mentioned drawing 2, and an above-mentioned same sign show a considerable part, and 24 is the auxiliary passage which the side face of the bearing object 5 cut, lacked, and was formed between the side face of the bearing object 5, and the inner shell 14.

[0049] In the scrolling compressor constituted as mentioned above, the inhalation hole 19 of the inner shell 14 is countered, and the inhalation pipe 20 is arranged, the inner shell 14 is supported by the supporter material 15, and the inhalation pipe 20 is arranged at the up approach of a well-closed container 1. Therefore, although detailed explanation is omitted, also in the gestalt of operation of drawing 8, the same operation as the gestalt of operation of drawing 1 and drawing 2 is acquired.

[0050] Moreover, since the auxiliary passage 24 is formed, the capacity led to the inner shell 14 and the capacity directly led to the compressor style 2 can be distributed to optimum dose by setting up the opening area of the auxiliary passage 24 suitably. Therefore, although detailed explanation is omitted, also in the gestalt of operation of drawing 8, the same operation as the gestalt of operation of above-mentioned drawing 7 is acquired. Moreover, it can apply to the gestalt of operation of the configuration of the gestalt of operation of drawing 8 of above-mentioned drawing 3 easily, and the operation which cools a motor 6 more effectively can be acquired.

[0051]

[Effect of the Invention] The inner shell of the shape of a cylindrical shape with which it was equipped by supporter material in the well-closed container as this invention was explained above, Fixed scrolling and rocking scrolling which are prepared in the up approach of the well-closed container in this inner shell, and have a tabular whorl gear tooth, The bearing object which was fixed to inner shell and ****(ed) rocking scrolling, and the motor which is formed in the lower approach of the well-closed container in inner shell, and drives rocking scrolling, The compressor style which consists of fixed scrolling and rocking scrolling, and inhales the gas by the side of the lower part in a well-closed container, and the inhalation pipe which countered the inhalation hole which it was prepared in the well-closed container and carried out opening to inner shell, has been arranged, and was open for free passage to the well-closed container are prepared.

[0052] by this, the great portion of gas inhaled should pass the inhalation hole of inner shell -- it flows in inner shell, and it can be comparatively alike through the clearance between motors, low-temperature gas can flow caudad, a motor can be cooled efficiently, and it is effective in improving operation dependability. Moreover, there are noise and effectiveness which controls vibration and makes operation calm by supporting inner shell by supporter material. Moreover, there is effectiveness which prevents the fault produced when a lubricating oil mixes in gas. Furthermore, there is effectiveness which cancels the fault of the increase of a necessary tooth space by extending an inhalation pipe to the lower approach of a well-closed container and the increase of costs.

[0053] Moreover, the inner shell of the shape of a cylindrical shape arranged in a well-closed container as this invention was explained above, Fixed scrolling and rocking scrolling which are prepared in the up approach of the well-closed container in this inner shell, and have a tabular whorl gear tooth, The bearing object with which the side face was equipped with the rising wood of inner shell while being fixed to inner shell and ****(ing) rocking scrolling, The motor which is formed in the lower approach of the well-closed container in inner shell, and drives rocking scrolling, The compressor style which consists of fixed scrolling and rocking scrolling, and inhales the gas by the side of the lower part in a well-closed container, and the inhalation pipe which countered the inhalation hole which it was prepared in the well-closed container and carried out opening to inner shell, has been arranged, and was open for free passage to the well-closed container are prepared.

[0054] by this, the great portion of gas inhaled should pass the inhalation hole of inner shell -- it flows in inner shell, and it can be comparatively alike through the clearance between motors, low-temperature gas can flow caudad, a motor can be cooled efficiently, and it is effective in improving operation dependability. Moreover, there is effectiveness which prevents the fault produced when a lubricating oil mixes in gas. Furthermore, there is effectiveness which cancels the fault of the increase of a necessary tooth space by extending an inhalation pipe to the lower approach of a well-closed container and the increase of costs.

[0055] Moreover, this invention is inserted in the inhalation hole prepared in inner shell, and is arranged while it penetrates and equips a well-closed container with an inhalation pipe, as explained above.

[0056] Since gas is directly led to the interior of inner shell by this, gas flows in inner shell much more efficiently, and a low-temperature quantity of gas flow increases by it on the comparison target which flows caudad through the clearance between motors. Therefore, a motor can be cooled still more effectively and it is effective in improving operation dependability. Moreover, there is effectiveness which prevents the fault produced when a lubricating oil mixes in gas. Furthermore, there is effectiveness which cancels the fault of the increase of a necessary tooth space by extending an inhalation pipe to the lower approach of a well-closed container and the increase of costs.

[0057] Moreover, to the inhalation hole which prepared and carried out opening to inner shell,

adhesion fitting is carried out and this invention arranges while penetrating and equipping a well-closed container with an inhalation pipe, as explained above.

[0058] Since gas is led still more directly to the interior of inner shell by this, gas flows in inner shell much more efficiently, and a low-temperature quantity of gas flow increases by it on the comparison target which flows caudad through the clearance between motors. Therefore, a motor can be cooled still more effectively and it is effective in improving operation dependability. Moreover, there is effectiveness which prevents the fault produced when a lubricating oil mixes in gas. Furthermore, there is effectiveness which cancels the fault of the increase of a necessary tooth space by extending an inhalation pipe to the lower approach of a well-closed container and the increase of costs.

[0059] Moreover, this invention is inserted in the inhalation hole prepared in inner shell, is arranged, and prepares an auxiliary hole in the side face of an inhalation pipe, and arranges it in the location corresponding to between a well-closed container and inner shell while it penetrates and equips a well-closed container with an inhalation pipe, as explained above.

[0060] Since gas is directly led to the interior of inner shell by this, gas flows in inner shell much more efficiently, and a low-temperature quantity of gas flow increases by it on the comparison target which flows caudad through the clearance between motors. Therefore, a motor can be cooled still more effectively and it is effective in improving operation dependability. Moreover, there is effectiveness which prevents the fault produced when a lubricating oil mixes in gas. Furthermore, there is effectiveness which cancels the fault of the increase of a necessary tooth space by extending an inhalation pipe to the lower approach of a well-closed container and the increase of costs.

[0061] Moreover, the capacity led to inner shell and the capacity directly led to a compressor style can be distributed to optimum dose by setting up suitably the location of an auxiliary hole established in the inhalation pipe, a number, opening area, and the direction of opening. That is, everything but the need and sufficient capacity sets the gestalt of an auxiliary hole as cooling of a motor so that it may lead through an auxiliary hole at a direct compressor style. Volumetric efficiency of a compressor style is not spoiled by this, but it is effective in obtaining few scrolling compressors of degradation.

[0062] Moreover, this invention is inserted in the inhalation hole prepared in inner shell, and is arranged, and prepares auxiliary passage between the side face of a bearing object, and inner shell while it penetrates and equips a well-closed container with an inhalation pipe, as explained above.

[0063] Since gas is directly led to the interior of inner shell by this, gas flows in inner shell much more efficiently, and a low-temperature quantity of gas flow increases by it on the comparison target which flows caudad through the clearance between motors. Therefore, a motor can be cooled still more effectively and it is effective in improving operation dependability. Moreover, there is effectiveness which prevents the fault produced when a lubricating oil mixes in gas. Furthermore, there is effectiveness which cancels the fault of the increase of a necessary tooth space by extending an inhalation pipe to the lower approach of a well-closed container and the increase of costs.

[0064] Moreover, the capacity led to inner shell and the capacity directly led to a compressor style can be distributed to optimum dose by setting up suitably the location of auxiliary passage, a number, opening area, and the direction of opening. That is, everything but the need and sufficient capacity sets the gestalt of auxiliary passage as cooling of a motor so that it may lead through auxiliary passage at a direct compressor style. Volumetric efficiency of a compressor style is not spoiled by this, but it is effective in obtaining few scrolling compressors of degradation.

[0065] Moreover, to the inhalation hole prepared in inner shell, by the sealant, adhesion fitting is carried out and this invention arranges while penetrating and equipping a well-closed container with an inhalation pipe, as explained above.

[0066] By the sealant, an inhalation pipe carries out adhesion fitting and is arranged by this at the inhalation hole of inner shell. For this reason, since gas is led to the interior of inner shell still more directly, gas flows in inner shell much more efficiently, and a low-temperature quantity of gas flow increases on the comparison target which flows caudad through the clearance between motors. Therefore, a motor can be cooled still more effectively and it is effective in improving operation dependability. Moreover, there is effectiveness which prevents the fault produced when a lubricating oil mixes in gas. Furthermore, there is effectiveness which cancels the fault of the increase of a necessary tooth space by extending an inhalation pipe to the lower approach of a well-closed

container and the increase of costs.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing of longitudinal section showing the gestalt 1 of implementation of this invention.

[Drawing 2] The enlarged drawing of the inhalation pipe part of drawing 1.

[Drawing 3] Drawing of longitudinal section showing the gestalt 2 of implementation of this invention.

[Drawing 4] The above-mentioned drawing 2 equivalent Fig. showing the gestalt 3 of implementation of this invention.

[Drawing 5] The above-mentioned drawing 2 equivalent Fig. showing the gestalt 4 of implementation of this invention.

[Drawing 6] The above-mentioned drawing 2 equivalent Fig. showing the gestalt 5 of implementation of this invention.

[Drawing 7] The above-mentioned drawing 2 equivalent Fig. showing the gestalt 6 of implementation of this invention.

[Drawing 8] The above-mentioned drawing 2 equivalent Fig. showing the gestalt 7 of implementation of this invention.

[Drawing 9] Drawing of longitudinal section showing the conventional scrolling compressor.

[Drawing 10] Drawing of longitudinal section showing other conventional scrolling compressors.

[Description of Notations]

1 A well-closed container, 2 A compressor style, 3 Fixed scrolling, 4 Rocking scrolling, 5 bearing objects, 6 A motor, 12 An inhalation pipe, 14 Inside shell, 15 Supporter material, 19 An inhalation hole, 20 An inhalation pipe, 22 A sealant, 23 An auxiliary hole, 24 Auxiliary passage.

[Translation done.]

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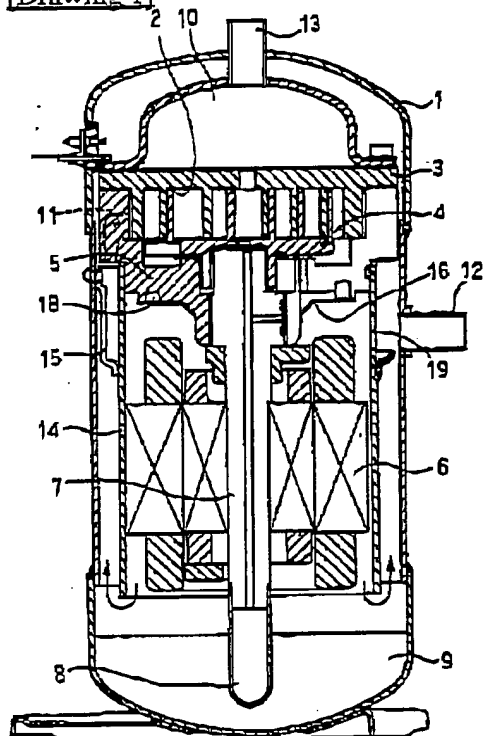
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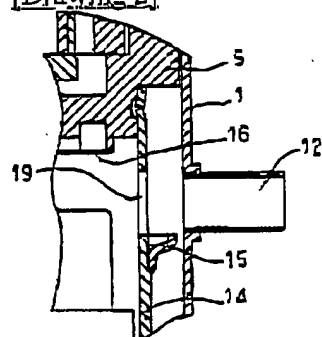
DRAWINGS

[Drawing 1]

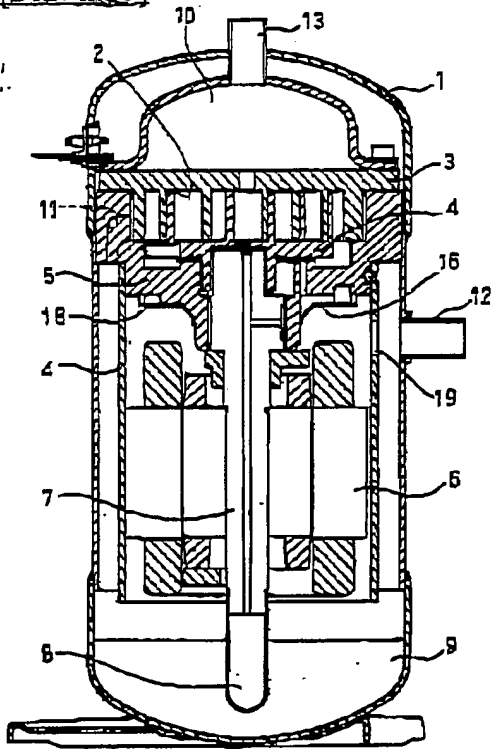


- | | |
|------------|-----------|
| 1: 全閉容昇 | 6: 電動機 |
| 2: 圧縮機構 | 12: 吸入パイプ |
| 3: 固定スクロール | 14: 内シェル |
| 4: 揺動スクロール | 15: 交換部材 |
| 5: 軸受本体 | 19: 吸入孔 |

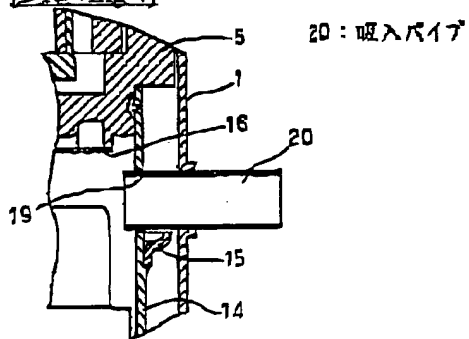
[Drawing 2]



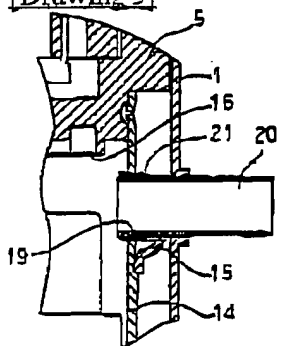
[Drawing 3]



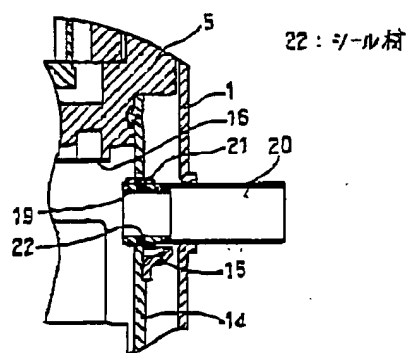
[Drawing 4]



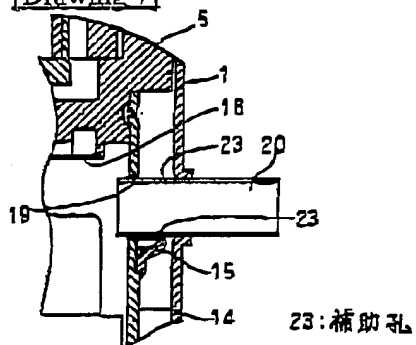
[Drawing 5]



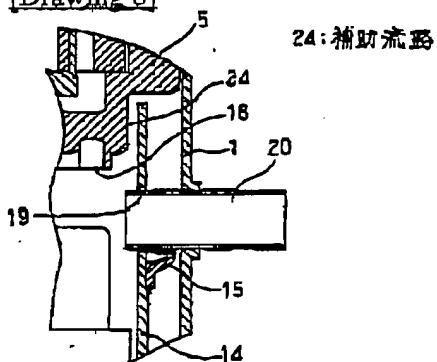
[Drawing 6]



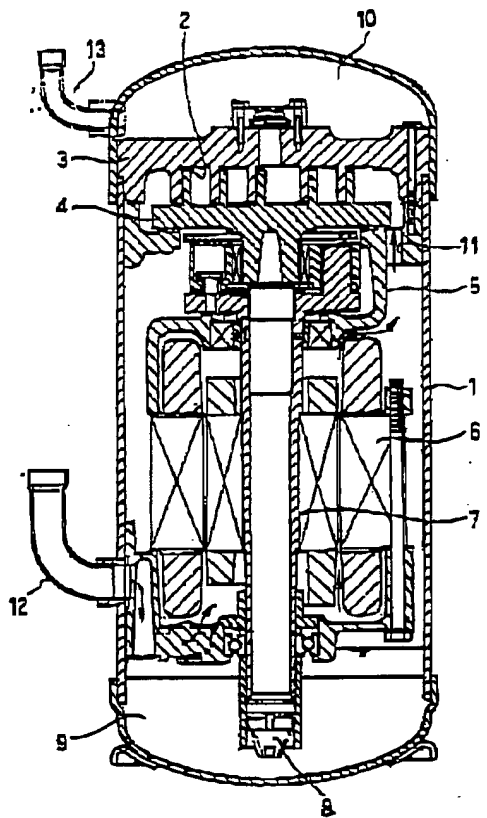
[Drawing 7]



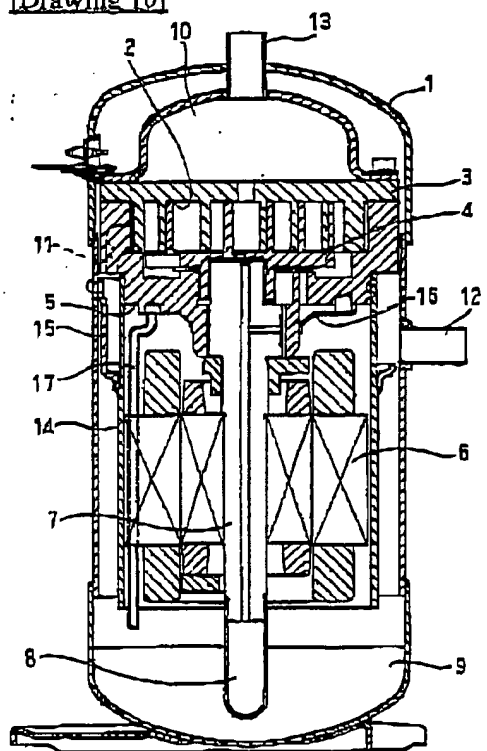
[Drawing 8]



[Drawing 9]



[Drawing 10]



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CLAIMS

[Claim(s)]

[Claim 1] The scrolling compressor characterized by providing the following Inner shell of the shape of a cylindrical shape with which it was equipped by supporter material in the well-closed container Fixed scrolling and rocking scrolling which are prepared in the up approach of the above-mentioned well-closed container in this inner shell, and have a tabular whorl gear tooth The bearing object which was fixed to the shell in the above and ****(ed) the above-mentioned rocking scrolling The inhalation pipe it has been arranged face to face at the motor which is formed in the lower approach of the above-mentioned well-closed container in the shell in the above, and drives the above-mentioned rocking scrolling, the compressor style which consists of the above-mentioned fixed scrolling and rocking scrolling, and inhales the gas by the side of the lower part in the above-mentioned well-closed container, and the inhalation hole it was prepared in the above-mentioned well-closed container, and carried out opening to the shell in the above, and it was open for free passage to the above-mentioned well-closed container

[Claim 2] The scrolling compressor characterized by providing the following Inner shell of the shape of a cylindrical shape arranged in a well-closed container Fixed scrolling and rocking scrolling which are prepared in the up approach of the above-mentioned well-closed container in this inner shell, and have a tabular whorl gear tooth The bearing object with which the side face was equipped with the rising wood of the shell in the above while being fixed to the shell in the above and ****(ing) the above-mentioned rocking scrolling The inhalation pipe it has been arranged face to face at the motor which is formed in the lower approach of the above-mentioned well-closed container in the shell in the above, and drives the above-mentioned rocking scrolling, the compressor style which consists of the above-mentioned fixed scrolling and rocking scrolling, and inhales the gas by the side of the lower part in the above-mentioned well-closed container, and the inhalation hole it was prepared in the above-mentioned well-closed container, and carried out opening to the shell in the above, and it was open for free passage to the above-mentioned well-closed container

[Claim 3] The scrolling compressor of any one publication of claim 1 characterized by having inserted in the inhalation hole prepared in inner shell, and having arranged while penetrating and equipping the well-closed container with the inhalation pipe, and claim 2.

[Claim 4] The scrolling compressor of any one publication of claim 1 characterized by having carried out adhesion fitting and having arranged to the inhalation hole prepared in inner shell while penetrating and equipping the well-closed container with the inhalation pipe, and claim 2.

[Claim 5] The scrolling compressor of any one publication of claim 1 characterized by considering as the inhalation pipe which has the auxiliary hole which inserted in the inhalation hole prepared in inner shell, has arranged, and was prepared in the side face and has been arranged in the location corresponding to between a well-closed container and inner shell while penetrating and equipping the well-closed container with the inhalation pipe, and claim 2.

[Claim 6] The scrolling compressor of any one publication of claim 1 characterized by having inserted in the inhalation hole prepared in inner shell, and having arranged, and preparing auxiliary passage between the side face of a bearing object, and inner shell while penetrating and equipping the well-closed container with the inhalation pipe, and claim 2.

[Claim 7] The scrolling compressor according to claim 4 characterized by having carried out adhesion fitting and having arranged by the sealant to the inhalation hole prepared in inner shell

while penetrating and equipping the well-closed container with the inhalation pipe.

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